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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,886	05/20/2002	Stefan Mohrdiek	721-1001	6320

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EXAMINER

MENEFEE, JAMES A

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 11/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,886

Applicant(s)

MOHRDIEK, STEFAN

Examiner

James A. Menefee

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pw

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 12-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Paul IP

PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

In response to the preliminary amendment filed 2/13/2003, claims 1-11 are cancelled and claims 12-22 added. Claims 12-22 are pending.

Drawings

Figure 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. Applicant admits in the brief description of the drawings that this Figure details the prior art. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "said front facet" in line 2. There is insufficient antecedent basis for this limitation in the claim.

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Regarding claims 13 and 21, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 16 refers to two reflectors. It is not clear whether these reflectors are meant to be the same reflectors as first noted in claim 12, or two new reflectors. This ambiguity must be corrected. It is believed that the reflectors referred to in claim 16 are the two external reflectors, while the two reflectors of each external cavity referred to in claim 12 are one external reflector and the facet of the laser diode.

Claim 17 recites the limitation "the reflectors **or beam splitters/combiners**" in line 3 (emphasis added). There is insufficient antecedent basis for beam splitters/combiners in the claim.

Regarding claim 19, the phrase "especially" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claim 19, the second "and/or" term (line 5) should be changed to "and". Without the optical fiber limitation (i.e. if the term is only "or") then there will not be antecedent basis for the term "said fiber" in the last line of the claim, thus the and/or term must read "and".

Claim 20 recites the limitations "the optical fiber" and "said optical fiber". There is insufficient antecedent basis for these limitations in the claim.

Claim 21 recites the limitation "the desired external cavities" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Any other claims are rejected as depending on the rejected base claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12-13, 17-19, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Ventrudo et al. (US 5,485,481). Ventrudo discloses the claimed invention as follows, see especially Fig. 2 and the discussion thereof.

Regarding claim 12, Ventrudo discloses a laser source 26 for generating a stable laser beam of a given bandwidth, including a laser guide means 32 for conducting the laser beam 28 exiting from a front facet 27 of the laser diode 26, comprising a plurality of external cavities at least partly within or as part of said laser beam guide means 32, each of said cavities being established by at least two reflectors.

While Ventrudo does not explicitly disclose that there are a plurality of external cavities, this feature is inherent from the disclosure. Clearly there is an external cavity between the partially reflecting front facet 27 and the grating 34. There also is inherently an external cavity between the front facet 27 and the front portion of the fiber. It is well recognized in the art that the front facet of a fiber is typically reflective, and thus provides an additional external cavity. Thus there is indeed a plurality of external cavities in Ventrudo's system.

With respect to the external cavities being dimensioned and arranged such that said laser operates essentially in a coherence collapse mode, see col. 5 lines 8-30.

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Regarding claim 13, all cavities are situated within the laser beam guide means 32 in front of the laser.

Regarding claim 17, the laser diode emits light at 980 nm, thus falling within the claimed range.

Regarding claim 18, these limitations are merely functional; they detail the operation or characteristics of the device. A functional statement cannot serve to distinguish a claim, which is not a process claim, from a reference since it does not define any structure. *In re Mason*, 244 F.2d 733, 114 USPQ 127 (CCPA 1957). Since there is no structure in the claim that supports these limitations, then the claim cannot be distinguished from the prior art.

Regarding claim 19, the laser guide means comprises an optical fiber.

Regarding claim 21, this is a method of forming the device of claim 12 that is met as in the rejection of claim 12 above.

Claims 12-13 and 15-18, are rejected under 35 U.S.C. 102(b) as being anticipated by Fye (US 4,840,456).

Regarding claim 12, Fye discloses a laser source 12 for generating a stable laser beam comprising a plurality of external cavities (terminating at 16 and 17 respectively) being established by at least two reflectors. It is not disclosed that the cavities are dimensioned and arranged such that the laser operates in a coherence collapse mode, however this function or characteristic does not define any structure. See the rejection of claim 18 above over Ventrudo.

Regarding claim 15, there is a serial cavity (terminating at 17), a lateral cavity (terminating at 16), and a beam splitter 15 deflecting apportion of the beam into the lateral cavity.

Regarding claim 16, two Bragg reflectors 16,17 having different bandwidths are provided.

Regarding claim 17, the laser emits light at 1300 nm, falling within the claimed range.

Regarding claim 18, see the rejection above under Ventudo.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14, 16, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ventrudo. Ventrudo discloses the limitations of the claims as shown above, but does not disclose the following:

Regarding claim 14, it is not disclosed that one of the cavities is located at the rear of the laser. However, it is well known in the art that laser diodes often emit from either side. It would have been obvious to one skilled in the art to allow the laser diode to emit from both sides, because this allows the user to take an output from either end of the device, as is well known. It would have been obvious to one skilled in the art to place another fiber system of Ventrudo on the rear of the laser diode for this same reason, and also because a duplication of parts for a

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multiplied effect is evidence of obviousness. *St. Regis Paper Co. v. Bemis Co.*, 549 F.2d 833, 193 USPQ 8 (7th Cir. 1977).

Regarding claims 16 and 22, it is not disclosed that each of the reflectors are Bragg gratings. It is known that the front of a fiber may be coated to prevent reflection. It would have been obvious to one skilled in the art to replace the front facet of the fiber with a coating to prevent the incidental external cavity from forming. One skilled in the art could then add a Bragg grating to the front of the fiber so that the reflective aspects of the front of the fiber are retained, thus keeping that reflectivity and not disrupting the coherence collapse effects. The reflectivity would then be provided by a grating, and would thus be more easily controllable than reflection caused by a facet as is well known.

Regarding claim 22, Ventrudo further discloses that fiber Bragg gratings may be formed using UV exposure methods.

Regarding claim 20, there are not discloses means for directing the laser beam into the fiber. Ventrudo discloses a lens 36 that accomplishes this purpose, though this is not the integrated means required by the claim and specification. However, it is well known in the art that a collimating lens can be integrated into the front face of a fiber. It would have been obvious to one skilled in the art to do this as it provides the good coupling function of lens 36 of Ventrudo, but eliminates problems with alignment of the lens and fiber, and also allows the fiber to be placed closer to the laser diode, as is well known.

Claims 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fye. Fye discloses the limitations of the claims as shown above.

Regarding claim 14, Fye does not disclose that one of the external cavities is at the rear of the laser. However, this is deemed obvious for the same reasons as given for the rejection of claim 14 over Ventrudo above.

Regarding claim 19, Fye does not disclose that the laser diode is a semiconductor laser diode. However, Fye discloses the laser diode is "of standard construction". Semiconductor laser diodes are well known in the art, and thus it would have been an obvious engineering design choice to use a semiconductor laser diode as the "standard" laser diode in Fye.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Crawford et al. (US 2003/0058905) clearly discloses at least part of the claimed invention, however is not usable as prior art due to the later filing date. Ziari et al. (US 6,525,872) discloses a system similar to Ventrudo et al., cited above. Blow et al. (US 4,853,933) discloses an external cavity disposed laterally to the main cavity. Waarts et al. (US 5,677,920) discloses two external reflectors, however there is only one external cavity. Kobayashi et al. (US 4,079,339) also discloses two external reflectors, but it is not clear that there is more than one external cavity. Siala et al. (US 5,914,972) shows support for the means for directing a beam into an optical fiber as discussed in relation to claim 20 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



JM
October 30, 2003



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